REMARKS

In view of the preceding amendments and following remarks, reconsideration of the present application is respectfully requested.

Claims 1-12 were pending in the Application, and were rejected. Claims 1-3, 6 and 8 were rejected under 35 USC 102(b) as being anticipated by Cooper (US 6,308,890). Claim 12 was rejected as being anticipated, e.g., by Walter (US 4,510,382). Claims 4, 5, 7, and 9-11, were rejected under 35 USC 103(a) as being obvious and unpatentable over Cooper '890 in view of Walter '382 and Kumamoto (US Patent Application 2003/0163424). Herein, Claims 1-12 are amended. Claim 13 is added. No new matter is introduced by these amendments.

The present invention, as recited in claims 1-8 is not limited to payment cards, but such embodiments are an important aspect related to the recitations of claims 9-13. In Claims 1-8, a magnetic data storage array is recited which comprises a magnetic stripe (102, 302) that is physically programmable in parallel from one side, and serially read-out only from the opposite side. Fig. 3 shows this in perspective view. A plurality of fixed-position write heads (304, 306, 308) are permanently associated with the magnetic stripe (302). A read head (310) is periodically shuttled across the length of the magnetic stripe to read out a serial code.

This enables the magnetic stripe to visit many different readers. The serial code can obviously include a credit card or bank account number, but it is not limited that way. Many different read heads at various locations can be used, so the magnetic stripe is advantageously not permanently associated with any one read head.

The limitation of writing from one side and reading from the opposite side, and doing the writing in parallel and the reading in serial, are critical to the present invention. These lead to several very important characteristics. First, the magnetic stripe can be homogeneously constructed and configured to work in legacy systems like magnetic credit card readers. Devices that require new readers to be installed will typically not succeed because the installed base and investment are too large.

In special applications where any reader could be used and interoperability is important, the actual surface and materials used in contact with the reader should not differ from traditional magnetic stripes. The cited prior art of Cooper '890 describes winding the write coils around the magnetic stripe where they can contact the read heads, e.g., Fig. 5. The wires are then also vulnerable to wear and breakage. Their intervening presence can disrupt the uniformity of the magnetic fields seen by the read head. Such can introduce read artifacts as the read head passes along over discontinuities, e.g., clumps of magnetic material or

turns of non-magnetic wire. See Cooper '890, Fig. 4, elements 10 and 20.

Claim 1 is amended to be more precise and clear about the construction and interrelationships of the elements. Specifically, the magnetic stripe is limited further to having a "uniform width and depth" along its longitudinal length. It is also important for the read head to have a continuous and uninterrupted contact surface on the magnetic stripe. Such is impossible in Cooper because the wires wind around the magnetic stripe and come between it and the read head.

Claim 1 is further amended to limit and characterize such by reciting, "wherein, said front side of the stripe of magnetic material is such that said read head has available to it a continuous, homogeneous, and uninterrupted surface to shuttle along." Support for these amendments can be found in Figs. 1 and 3 where the magnetic stripes (102, 302) are schematically and physically illustrated as described, e.g., uniform depth and width. The Specification describes in the "Detailed Description of the Invention" section that the magnetic stripe (102) uses:

> industry-standard formats and encoding. For example, ISO-7810, ISO-7811(-1:6), and ISO-7813, available from American National Standards Institute (NYC, NY). These standards specify the physical characteristics of the cards, embossing, low-coercivity magnetic stripe media characteristics, location of embossed characters, location of data tracks 1-3, high-coercivity magnetic stripe media characteristics, and financial transaction cards. A typical Track-1, as

> defined by the International Air Transport Association (IATA), is seventy-nine alphanumeric 7-bit characters recorded at 210-bits-per-inch (bpi) with 7-bit encoding, Track-2, as defined by the American Bankers Association (ABA), is forty numeric characters at 75-bpi with 5-bit encoding, and Track-3 (ISO-4909) is typically one hundred and seven numeric characters at 210-bpi with 5-bit encoding. Each track has starting and ending sentinels, and a longitudinal redundancy check character (LRC). The Track-1 format includes user primary account information, user name, expiration date, service code, and discretionary data. These tracks conform to the ISO/IEC Standards 7810, 7811-1-6, and 7813, or other suitable formats.

Figs. 1 and 3 also both show the placement of parallel write heads on one side of the magnetic stripe and a shuttle read head on the opposite side. Fig. 1 further illustrates the case where permanent data bits are interspersed with programmable data bits. Cooper '890 makes no such teaching. Claim 3 is amended to recite a combination of bits written by the permanent write heads and a conventional card programmer. The Specification teaches on page 6 that,

> A next set of bit positions 113-116 (d3-d6) of magnetic stripe 102 are fixed, and not programmable by data generator 104. A conventional card programmer is used by the card issuer to fix these data bits. A second set of magnetic write heads 117-121 are located under bit positions d7-d11 of magnetic stripe 102. The data values of these bits can also be controlled by data generator 104 and are therefore programmable. A last set of bit positions 122-125 (d12-d15) of magnetic stripe 102 are fixed, and not programmable by data generator 104. In alternative embodiments of the present invention, as few as one bit is programmable with a corresponding write head connected to data generator 104, or as many as all of the bits in all of the tracks.

Writing in parallel from one side allows individual stationary write heads to be permanently embedded beneath the magnetic stripe, and such will not mechanically interfere with the serial read head shuttling along on the opposite side.

Referring now to Claims 9-17, the claimed present invention provides a payment card (100, 202) with a magnetic strip (102, 302) that is programmed from inside the card and read from outside the card. Some bits in the magnetic strip are permanent bits (113-116 and 122-125). Pressure detectors (106, 108) sense when the card has been read by a reader (101, 206, 310) and trigger a data generator (104) to use a predictive algorithm to issue a new code to programmable bits via write heads (110-112 and 117-121). The data generator (104) receives its initial programming through a data receptor (105).

The cited prior art by Cooper '890 differs substantially. Claims 1-12 have been amended to more precisely recite the claimed subject matter and to more clearly differentiate from the cited prior art. Specifically, Cooper '890 describes a magnetic strip that is wrapped at various bit positions by independent coil windings (21). This has the unfortunate consequence of requiring half of each coil turn to lay on the exposed rear outside surface of the magnetic strip. There, they are subject to wear and breakage by the reader which rubs and contacts the magnetic strip

every time the card is used. Cooper '890 also recognizes that this construction leads to moisture seepage problems, and suggests an insulating covering can be applied to protect the magnetic strip Col. 7, line 65, to col. 8, line 4.

The claimed present invention puts individual write heads and their windings entirely behind the magnetic strip and inside the card. The magnetic strip can therefore be ordinarily constructed and configured, and therefore requires no insulating covering that could interfere with the magnetic reading by the reader. The write head windings are also not exposed to card reader wear.

Claims 1-8 are not limited to plastic carriers or payment cards. They recite a magnetic stripe that is written on one side and read on the other. More precisely, the bits are written by individual write heads in parallel that do not move and are read by a read head that swipes down the length on the read side. Some of the bits may be fixed and not writeable by the write heads.

Cooper '890 further describes a magnetic strip that is entirely programmed at every bit position by the several independent coil windings (21). Fig. 4. There is no teaching for permanent bits that are not writeable by the control circuit (11).

Claim 12 was rejected under 35 USC 102(b) as being anticipated by Walter. Claim 12 is amended herein to further recite, "including on an otherwise conventional plastic user payment card with a magnetic stripe a means to generate and write a progressing

code number to said magnetic stripe from beneath and completely within said plastic user payment card without the support of an external card reader or writer". This should sufficiently differentiate the claimed present invention from Walter and others who require an external means to write back the serial number. See, Walter column 4, lines 42-50. The prior art method of writing back is not practical because too many legacy card readers can only read. Replacing all of them is impossible because of the resistance and expense involved. Writing the cards is risky, and placing card writers in too many hands in the public is an invitation for widespread fraud.

Accordingly, in view of the preceding amendments and remarks, it is respectfully submitted that the pending application, with pending Claims 1-13, is in condition for allowance and such action is respectfully requested.

A petition and fee payment for a one months extension to respond is included herein.

Should the Examiner be of the opinion that a telephone conference with Applicant's attorney would expedite matters, the Examiner is invited to contact the undersigned below.

Respectfully submitted,

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By: _____
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